



Detection and Alarm module



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NS-EN ISO 9001:2000 Certificate No.900765

The certificate does not cover manufactured products.



This product satisfies all requirements applicable to relevant standards and directives:

EMC

Immunity Standard

- EN50130-4 Product Family Std. Immunity Alarm Systems

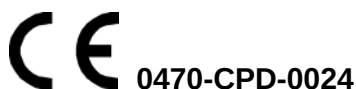
Generic Emission Standard:

- EN50081-1 Residential, Commercial and Light Industry
- EN50081-2 Industrial Environment

LVD

- LVD73/23/EEC Low Voltage Directive

Delta DA Quad is tested according to EN54-4



For other approvals and certificate please visit our Web site www.eltek-fs.com

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1. Welcome



Congratulations on your purchase of the *Delta DA Quad* module, — a cost-effective detection and alarm module developed to facilitate the decentralisation of the fire alarm installation across the protected area.

The *Delta DA Quad* module gives you the possibility of dividing — if suitable — the conventional ‘large fire cabinets’ — with loop cards, batteries, terminal blocks, etc. — into several small, easily concealed, decentralised modules. At the same time, you can operate the whole fire alarm system from the attractive *Delta OP* panel.

About this Manual



User's Guide
Delta DA Quad
(this manual)



Installation Guide
Delta DA Quad

This manual has been written with the intention of giving users of *Delta DA Quad* the technical information required for using the new module.

- ✓ **Installation of *Delta DA Quad*:**
For information on how to install *Delta DA Quad*, see the folder ‘*Installation Guide Delta DA Quad*’, which accompanies the module. Also refer to ‘Documentation Chart for *DELTA Technology*’, page 18.
- ✓ **Set-up of *Delta DA Quad*:**
For safety reasons, the configuration of *Delta DA Quad* should be regarded as *Access Level 3* (in accordance with EN 54). Only authorised and qualified personnel should have access to the set-up. Please contact *Honeywell Life Safety's* Service Department.

Take a look at the table of contents to familiarise yourself with this booklet.

We have also emphasised the use of images and graphics to make the book easy and interesting to read.

Glossary and Abbreviations

If you wonder what certain words, expressions or abbreviations in our publications mean (technical terms), please, visit our site on the Internet to download the freshest version of booklets such as “*Glossary Base, Terminology Fire Alarm Systems*” and similar publications. The booklets explain technical terms used in *Honeywell Life Safety's* systems for fire alarm, voice alarm, emergency lighting, etc.

The easiest way to find products and other information on our Internet site is by using the site's *search engine*. Just type a key word in the search field, select the area you want to search within and click on the <Search> button.



2. Brief Description of *Delta DA Quad*

Delta DA Quad is a micro processor-based fire detection and alarm module designed for connection to the *Delta* and *ANX95* families of fire alarm systems.

Every *Delta DA Quad* module has programmable inputs and outputs which can be configured for connection of addressable- analogue detector loops and/or alarm outputs. Some alarm outputs are monitored and others are potential-free.

The *Delta DA Quad* module incorporates an advanced multi-voltage power supply, which powers the detector loops and alarm outputs, and charges the accumulator batteries. It can also supply operating panels in the network.

The *Delta DA Quad* module has a port for direct *eBus* connection^[1] for communication with other units in the fire alarm network. The module also incorporates a communication port for connecting computers via the RS232C interface.

You can operate the *Delta DA Quad* system from one of the *Delta OP* panels connected to the fire alarm network. These panels are the main interface between you and the system, while the *Delta DA Quad* modules operate in the background.

Adjustment of the advanced functions in *IQ8* detectors — the new range of fire monitors from *Honeywell Life Safety* — can be performed directly from *Delta OP* panel.

Applications

The *Delta DA Quad* unit can be used as a detection and alarm module in a small or large fire alarm network, or it can be an integrated part of a stand-alone fire alarm panel, for example the *Delta Compact Quad* – see also the chapter, ‘Typical Configurations’, on page 12.

Configuration

The *Delta DA Quad* does not require any adjustment or configuration of DIP-switches or jumpers on the circuit card. However, commissioning does consist of configuring the software in *Delta DA Quad* to communicate in a network with the *Delta OP* panel and with other modules or fire alarm panels.

Configuration is performed using *FireWin Explorer* — a Windows-based program that runs on a connected PC. Simple functions can also be configured via the keypad on connected *Delta OP* panels by selecting commands from *set-up menus* in a hierarchical menu system. The *Delta DA Quad* module stores the configuration data — serial and system number, number of systems, etc. — in the module’s EEPROM.

For more detailed information on the configuration of the *Delta DA Quad*, see the *FireWin Explorer* appropriate documentation.

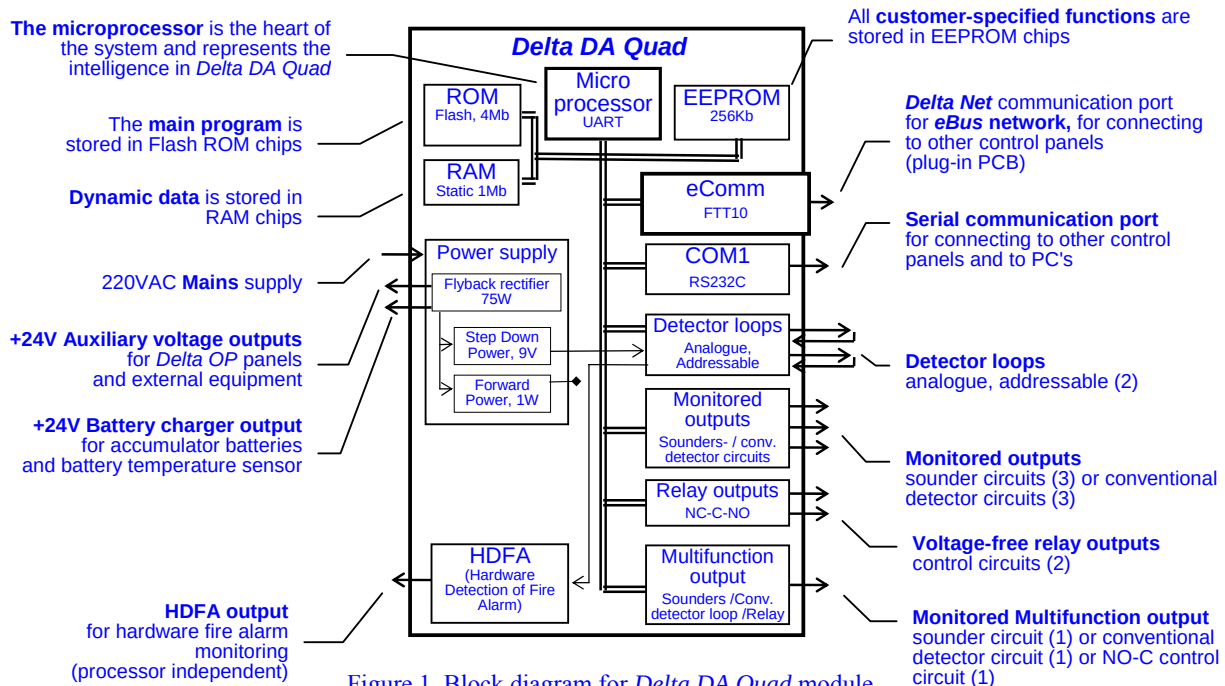
^[1] The use of plug-in "Kit for OP, DA: *eBus Communication Board*" is required.

Main Features

- ☆ **Small fire detection and alarm module**
adapted for decentralisation of the fire alarm system across the protected area
- ☆ **Compatible with the ANX95 family of control panels**
this allows direct connection to existing *master/slave*² and *multi-master* fire alarm networks
- ☆ **Compliance with European Standard EN 54 Part 2**
regarding monitoring and alarm equipment
- ☆ **Uses modern technology**
with microprocessor based electronics with many programming possibilities
- ☆ **Supports the new family of intelligent IQ8 fire detector range**³
with patented multisensor technology. The detectors have a high immunity against unnecessary alarms due to filter and advanced algorithmic. All detectors have build-in isolators.
- ☆ **Reliable and flexible control and monitoring system**
with low power consumption and sophisticated monitoring of all critical components
- ☆ **Uses multi-voltage power supply**
for automatic battery charging and driving of detector loops, alarm outputs and other panels
- ☆ **Supports downloading of configuration parameters**
direct from a PC running the *FireWin Explorer* application
- ☆ **Also available as an integral part of the Delta Compact Quad fire alarm panel**
with built-in *Delta OP* operating panel and standard accumulator batteries

Block Diagram

The block diagram below shows the main functions of the *Delta DA Quad* module. For further information, see 'Technical Specification', on page 13.



² Connection to *master/slave* networks via connected *Delta OP* panels.

³ The *Apollo* range of monitors is not supported by the *Delta DA Quad* module, only by the *Delta DA*.

System Diagram

This system diagram shows an example of the inputs, outputs and interfacing connections used in a *Delta DA Quad* fire alarm installation.

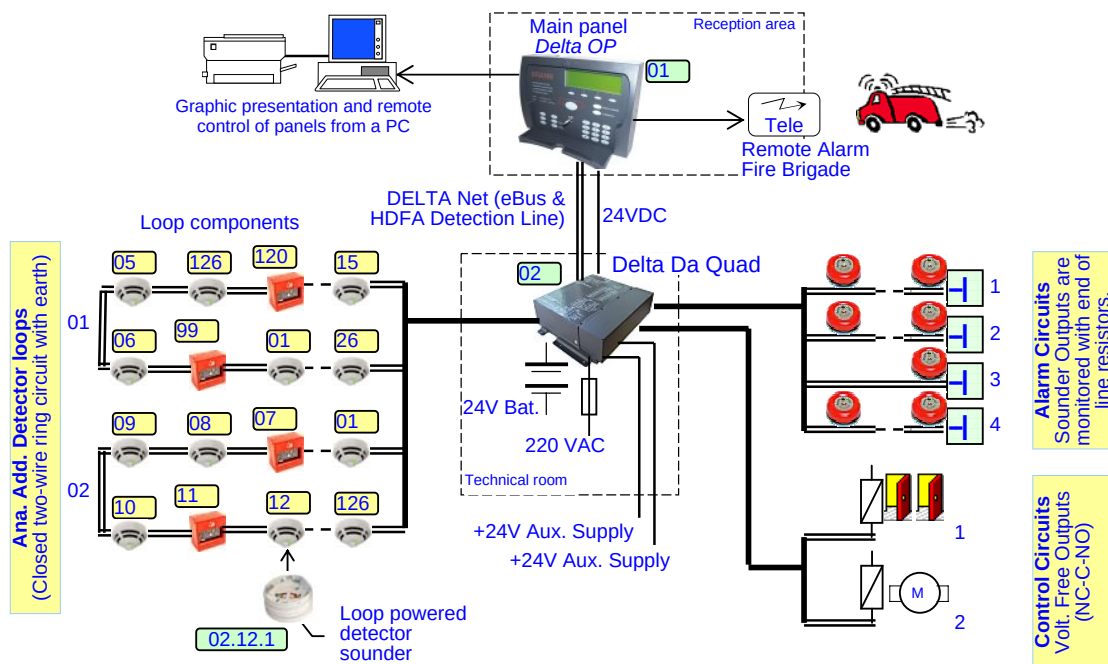


Figure 2 Example of fire alarm installation using *Delta OP* panel (system 01) and *Delta DA Quad* module (system 02), monitoring addressable loop components. The remote alarm requires the use of the 'Kit for OP: Fire Brigade Termination Card'. The IQ8 detectors are addressed using the *EDP-1* hand-held programmer.

Inputs, Outputs & Communication Ports

The *Delta DA Quad* module can be connected as a node in a fire alarm network, which allows you to decentralise the unit, thus enabling the distribution of terminal blocks for detector loops, sounder circuits and control circuits.

The module has built-in following individually programmable inputs and outputs — no jumpers required:

- Inputs
 - ◇ 2 analogue, addressable detector loops (TB1, TB2)
- Outputs
 - ◇ 1 multifunction output (TB5)
 - ◇ 3 monitored voltage outputs (TB3, TB4, TB6)
 - ◇ 2 voltage-free NC-C-NO relay outputs (TB7, TB8)
- Communication Ports
 - ◇ 1 *eBus* communication port (COM1)
 - ◇ 1 serial communication port (CN1:1-2)

Detector Loops — TB1, TB2

The *Delta DA Quad* module has two inputs (TB1 and TB2) for connecting two analogue addressable two-wire ring detector loops as shown in Figure 3.

The loops are continually monitored for breaks and short circuits. The *Delta DA Quad* module also monitors all the detectors and units connected to the loops. If it detects a break in the loop, the module sends the communication pulses through the return circuit of the loop. By connecting isolators at strategic points on the loop, you can reduce the number of detectors that will stop functioning if a short circuit occurs.

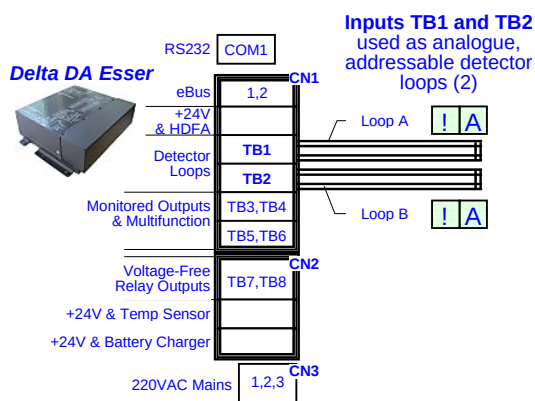


Figure 3 Analogue addressable detector loops

Only *Esser* addressable loop components Series 9200 and IQ8 may be connected to these loops. For detailed technical information on loop inputs TB1 and TB2, see chapter, ‘Technical Specification’, page 13.

Alarm & Control Circuits

The *Delta DA Quad* module has three different types of outputs for connection of alarm and control circuits:

- ◇ A monitored Multifunction output (TB5)
- ◇ Three monitored voltage outputs (TB3, TB4 and TB6)
- ◇ Two voltage-free relay outputs (TB7 and TB8)

Monitored Multifunction Output — TB5

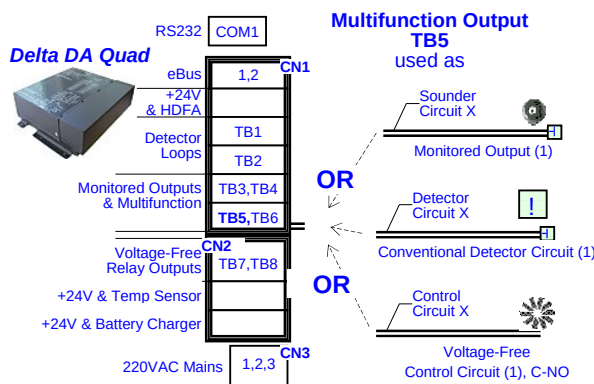


Figure 4 Monitored Multifunction Output

The *Delta DA Quad* module is also equipped with a monitored Multifunction output, TB5, which you can configure for connecting:

- A monitored alarm circuit, usually used for sounder circuits, or
- A conventional detector loop¹, or
- A C-NO voltage-free control circuit

The sounder and the detector circuits are monitored for breaks and short circuits using a 6k8 *end-of-line resistor* and internal electronic fuses.

For further information, see the chapter, ‘Technical Specification’, page 13.

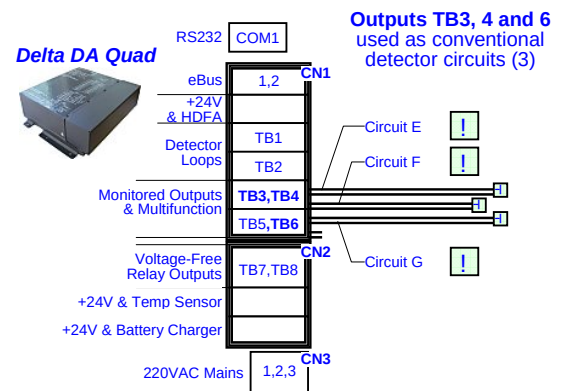
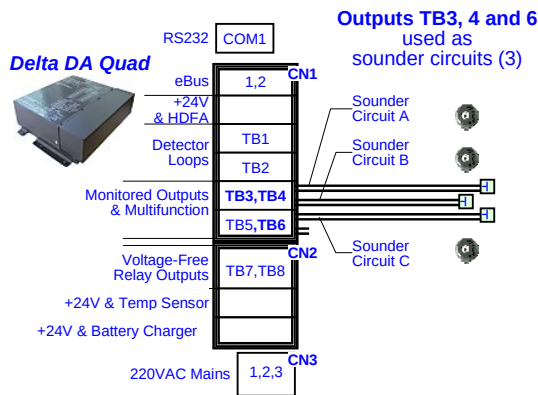
¹ Contact *Honeywell Life Safety AS* regarding the type conventional detectors to use.

Monitored Voltage Outputs — TB3, TB4, TB6

The three monitored voltage outputs TB3, TB4 and TB6 are intended for connection of standard sounder circuits; see Figure 5.

The circuits are monitored for breaks and short circuits by using a 6k8 *end-of-line resistor* and by internal electronic fuses. In the module's normal mode, the circuit is monitored and has an output voltage of -24VDC. When the *Delta DA Quad* is in alarm mode, this output voltage switches to +24VDC.

You can also configure these three voltage outputs to function as conventional detector loops, Figure 6.



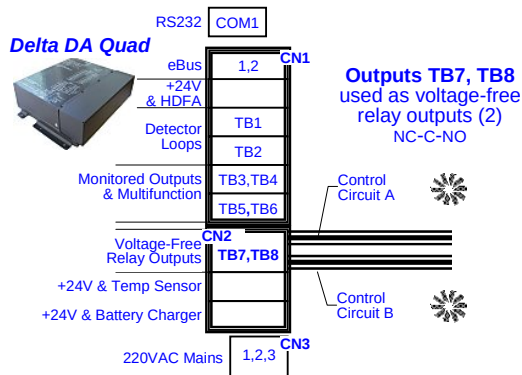
OR

Figure 5 Monitored voltage outputs drive sounder circuits

Figure 6 Monitored voltage outputs configured to drive conventional detector loops

For detailed technical information on voltage outputs TB3, TB4 and TB6, see the chapter, 'Technical Specification', page 13.

Voltage-Free Relay Outputs — TB7, TB8



The *Delta DA Quad* module is equipped with two voltage-free relay outputs — TB7 and TB8, of the NC-C-NO type — for connection of circuits used for controlling external equipment, such as door-hold magnets, ventilation fans, motors, etc., see Figure 7.

For switching of 220V equipment, you must always use an external auxiliary relay.

Figure 7 Voltage-free relay outputs

Communication Ports

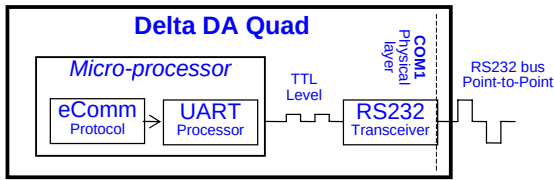


Figure 8 Block diagram for COM1

COM1 port, (eComm protocol via RS232C)

The *Delta DA Quad* module communicates with computers, *Delta OP* panels and other *Delta DA Quad* modules using the *eComm* protocol. Short distance communication can be implemented via the standard serial bus RS232C.

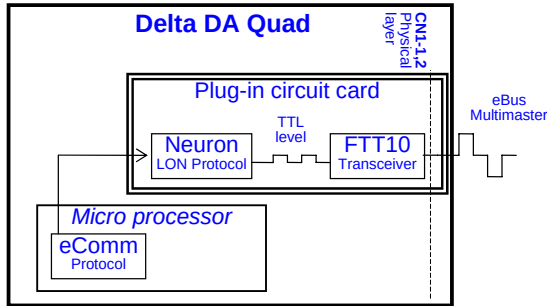


Figure 9 Block diagram for the CN1:1-2 port (based on plug-in circuit card)

CN1:1-2 port, (eComm protocol via FTT10)

For longer distance communication, the *eBus Multimaster* (FTT10) is used.

Support for the *eBus* communication is implemented using the plug-in '*Kit for OP,DA: eBus Communication Board*'. See also the documentation supplied with the kit.

Communication Port COM1

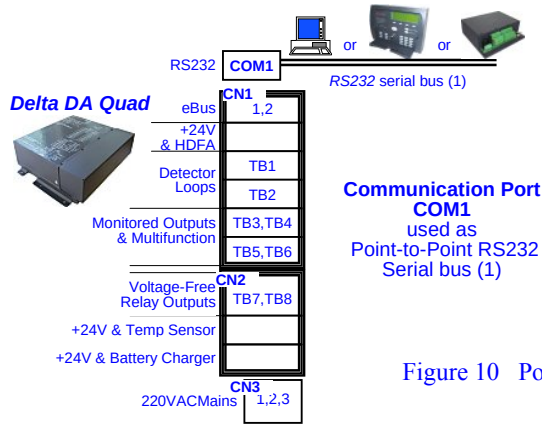


Figure 10 Port COM1, D-Sub 9-pin communication port

The *Delta DA Quad* module is equipped with a D-Sub 9-pin communication port — COM1, see Figure 10 — which is used to connect computers, *Delta OP*, *Delta DA* and other *Delta DA Quad* modules via the standard *RS232 Point-to-Point serial bus*.

Communication Port CN1:1-2

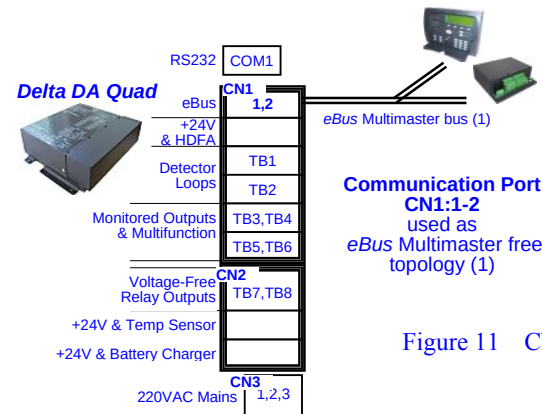


Figure 11 CN1:1-2, terminal block; communication port

The CN1:1-2 communication port is located on terminal blocks and is used for connecting *eBus* (free topology, Multimaster bus, see Figure 11), which allows long distance communication with other *Delta DA Quad* modules, *Delta OP* panels, ANX95 fire alarm panels (*eNode* required) and other equipment and nodes connected to the bus.

HDFA:
Hardware Detection
of Fire Alarm

HDFA Input & Output — Fire Brigade Output

The *Delta DA Quad* module's HDFA detection line input — terminal block CN1:13-14 — and line output — terminal block CN1:15-16 — are used to connect the module to other system units in the *DELTA Net*.

The HDFA detection line connects all system units, and it is monitored using a 6k8 *end-of-line resistor*, which is connected to the last module.

Why

In order to make it possible for a *DELTA Net* fire alarm system to be able to report a fire alarm when a communication fault occurs — or the micro processors stop — the *Delta DA Esser* module has built-in galvanically isolated electronics for hardware detection of fire alarms.

How

If such a fault occurs, the hardware detection and alarm function in *Delta DA Quad* will automatically be activated to monitor the analogue detectors connected to the module. If one of these detectors reports a fire alarm (even though the standard loop communication is not functioning), the module's HDFA function will transmit the fire report through the HDFA detection line to the main *Delta OP* panel.

Remote Alarm
Fire Brigade

HDFA alarms are displayed as a fire alarm indication and will activate the fire brigade remote output in the main *Delta OP* panel.

See also the description in the chapter, 'HDFA Detection Line — Fire Brigade Output', on page 19.

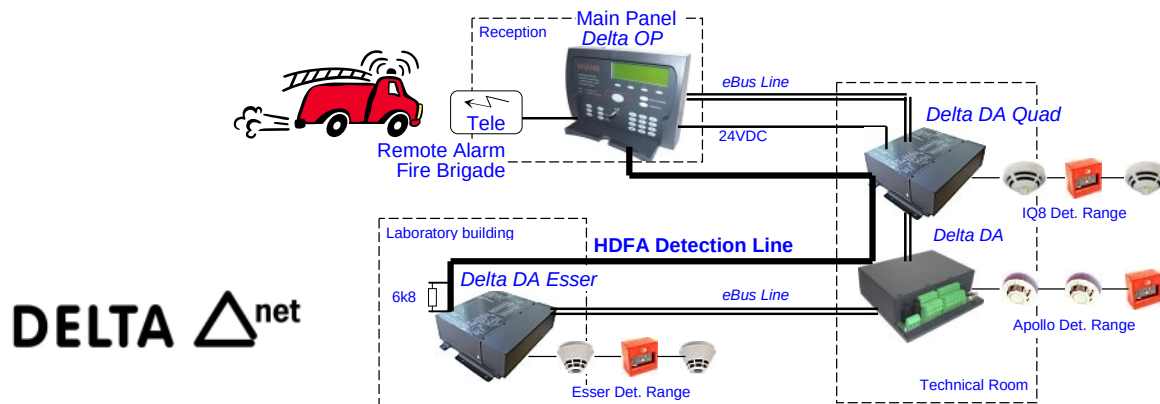


Figure 12 Example: *DELTA Net* with HDFA Detection Line.

Typical Configurations

The *Delta DA Quad* module can be used in both centralized and distributed solutions.

In the compact solution — all-in-one cabinet — the *Delta OP* and *Delta DA Quad* modules form a complete centralised fire alarm system: *Delta Compact Quad*.

In distributed solutions, the *Delta DA Quad* module is connected to a network of fire alarm modules and panels of several types and ranges, such as: *Delta DA Esser*, *Delta DA*, *Delta Compact Quad*, *Delta Compact* and *ANX95*. The module can then be used to split up the 'large fire cabinets', with loop cards, batteries, terminal blocks, etc., into several small, easily concealed decentralised modules.

The figures in this chapter show two examples of typical *Delta DA Quad* configurations.

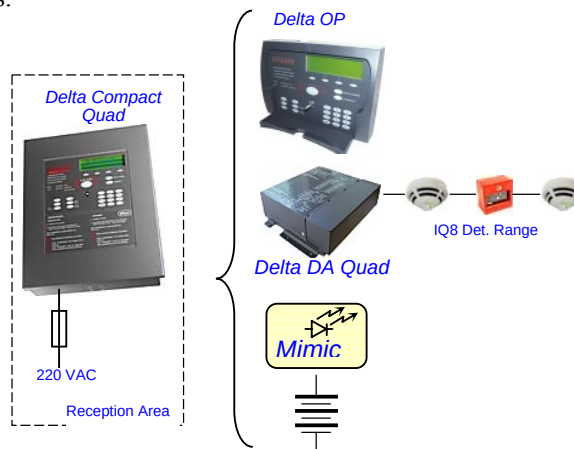


Figure 13 **Standard *Delta Compact Quad* cabinet** (the cabinet can contain all the modules shown)

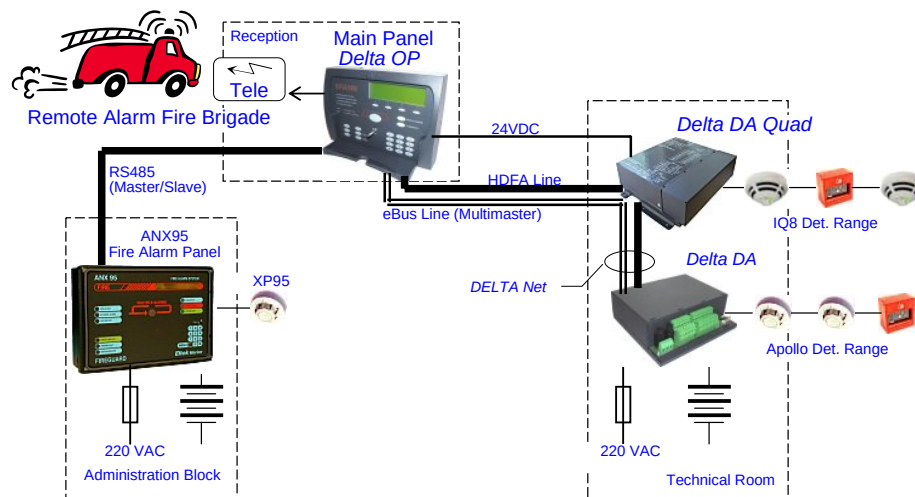


Figure 14 **Distributed solution with the *Delta DA Quad* module, *Delta OP* main operating panel, and fire alarm modules from other ranges, such as the *ANX95* fire alarm panel.**

Communication Channels			
	PROGRAM MABLE	TYPE	APPLICATION
COM1	Yes	Series RS232C 9-pin D-Sub male Protocol: <i>eComm</i> ⇒UART Physical layer: RS232 transceiver	Communication with <i>Delta OP</i> , <i>Delta DA Esser</i> or PC with <i>eComm</i> protocol
CN1:1-2	yes	Series FTT10, (eBus) Terminal block Protocol: <i>eComm</i> ⇒LON Physical layer: FTT-10 transceiver	Communication with control panels and other nodes in <i>eBus</i> network. (Requires use of 'Kit for OP,DA: <i>eBus Communication Board</i> '

Inputs — for Detector Circuits			
TYPE	QTY.	ELECTRICAL DATA	COMMENTS
Detector Circuits:	2	Terminal blocks: CN1:5-6-17-18 and CN1:7-8-19-20 Logical Ref.: TB1 and TB2	Individually programmable. Used as follows:
Analogue addressable detector circuits	2	Two-wire ring loops 36VDC ±15%, 140mA 36VDC ±15%, 140mA 36VDC ±15%, 280mA 24V+8V ±15%, 30mA 0.5µF max. Break-proof Short circuit-proof Esser Detector Range, Series 9200/IQ8 126 addressable	Loops with return to the <i>DA Esser</i> module Max. Normal mode Max. Alarm mode, 50Ω loop resistance Max. Alarm mode, 25Ω loop resistance; loop voltage must always be >17V Pulse voltage, current Loop capacitance Also loop communication from return side Protected by internal electronic fuses. Recommended use of isolators for every 32 loop components. Communication Protocol: Esser Max. no. of loop components

Outputs — for Alarm and Control Circuits			
TYPE	QTY.	ELECTRICAL DATA	COMMENTS
Monitored voltage outputs	3	Terminal blocks: CN1:9-10, CN1:21-22 and CN1:23-24 Logical Ref.: TB3, TB4 and TB6	Individually programmable. Used as follows:
Sounder Circuits	3	Two-wire circuits 17-30VDC, max. 5mA 17-30VDC, max. 1A Break-proof Short circuit-proof Max. 20 sounders	No return. Terminated with a 6k8 <i>terminating resistor</i> In normal, monitoring mode, -24V In alarm mode, +24V (reversed polarity) Monitored by <i>terminating resistor</i> Protected by internal electronic fuses Per circuit (Inductive loads must be protected by reverse-current diodes)
OR			
Conventional detector circuits	3	Two-wire circuits 17-30VDC, max.5.2mA 17-30VDC, 140mA 17-30VDC, 280mA 150nF Break-proof Short circuit-proof Max. 32 detectors Type: Conventional	Circuits without return. Terminated with a 6k8 <i>terminating resistor</i> 24VDC in normal mode, 0V-reset Max. Alarm mode, 50Ω line resistance Max. Alarm mode, 25Ω line resistance; loop voltage must always be >17V Loop capacitance Monitored by <i>terminating resistor</i> Protected by internal electronic fuses Per loop, according to EN 54 regulations (Contact <i>Novar AS</i>)
Monitored Multifunction output	1	Terminal block: CN1:11-12 Logical Ref.: TB5	Individually programmable. Used as follows:
Sounder Circuits	1	Two-wire circuits (electrical data)	No return. Terminated with a 6k8 <i>terminating resistor</i> Same specification as for sounder circuits above
OR			
Conventional detector circuits	1	Two-wire circuits (electrical data)	No return. Terminated with a 6k8 <i>terminating resistor</i> Same specification as for conventional detector circuits above
OR			
Voltage-free control circuits	1	Type: C-NO Max. 30V, 2A	Double-pole voltage-free relay contact Common—Normally Open Circuits connected to the relay contacts. Connecting 230VAC load is not permitted
Voltage-free relay outputs	2	Terminal blocks: CN2:1-2-3 CN2:8-9-10 Logical Ref.: TB7, TB8 Type: NC-C-NO Max. 30V, 2A	Used as control circuits Three-pole voltage-free relay contacts Normally Close— Common—Normally Open Connecting 230VAC load is not permitted



Max. total load for all four sounder circuits is 3A, while mains off and the system is in alarm mode.

Input and Output — for HDFA Detection Line			
TYPE	QTY.	ELECTRICAL DATA	COMMENTS
HDFA input and output HDFA (Hardware Detection of Fire Alarm)	1	Terminal blocks: CN1:13-14 CN1:15-16 Two-wire circuits 24VDC, $\pm 20\%$, 10mA $<150\Omega$ $150\Omega > < 3000\Omega$ $3000\Omega > < 8000\Omega$ $>8000\Omega$	Used for processor independent fire detection from Esser detectors HDFA detection line (in) HDFA detection line (out) No return. Terminated with a 6k8 <i>terminating resistor</i> Voltage and current Short-circuit resistance Alarm resistance Normal resistance Break resistance

Storage Capacity			
PROGRAMMED IN →	EEPROM (256kb)	RAM (1Mb static)	ROM (4Mb OTP)
System's main code			stored in Flash ROM
Number of system messages		1000	
Number of customer-specified functions and system parameters			
◇ Alarm texts	400		
◇ Assignments, detector zones	256		
◇ Assignments, alarm and control outputs	256		

External Dimensions

Dimensions		
WIDTH	HEIGHT	DEPTH
172.5mm	205mm	68 mm

Other Data		
		COMMENTS
Weight	1.54 kg	
Storage temperature	-15 °C to +85 °C	
Operating temperature	-0 °C to +55 °C	
Humidity	0% to 95%	Relative humidity without condensation
IEC Protection Class	IP30	
Article Number:	251500	<i>Delta DA Esser, English</i>

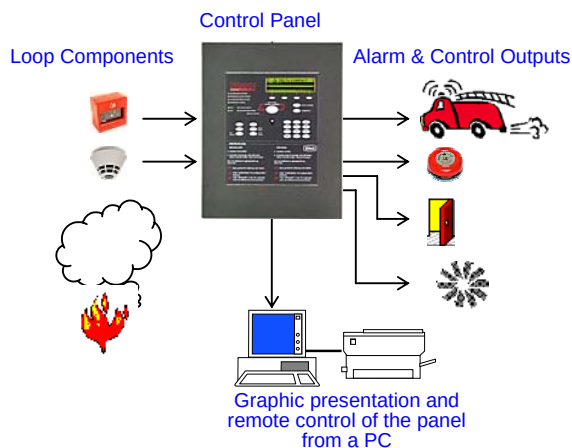
4. Appendix

What's a Fire Alarm System?

Honeywell Life Safety's fire alarm system principally consists of an *intelligent* control panel (or several panels in a network) which provides visual warnings of alarm situations in various ways and activates the control panel's *alarm and control outputs*. This is done on the basis of information about the development of smoke, heat, flames, etc., from *components* on the loops.

The system communicates with the following types of *components* on the detector loops:

- ◆ **Conventional** detectors
- ◆ **Analogue, addressable** detectors
- ◆ **Ancillary addressable devices**
(e.g. addressable digital and analogue inputs on I/O units — **DIO**)



Example of the principles of a fire alarm system

Each of the system's *alarm and control outputs* — terminal blocks in the control panels or modules and in ancillary devices — can be programmed individually and can be of the following types:

- ◆ Voltage Outputs
- ◆ Voltage-free outputs

The control panel may be configured to activate — based on information from *sub zones* — every *output group* in the system in many different ways^[6].

More information on chapters "Fire Zones & Output Groups — Definition", page 22, and "Addressing Rules for Networked Systems", page 21.

DELTA Technology — definition



DELTA Technology is the collective term for the Honeywell Life Safety fire alarm system, which uses user-friendly logic for network engineering, control panel operation and fire alarm evaluation.

The *DELTA Technology* concept has the following principal features:

- Complies with EN 54, Parts 2 and 4
- Modular construction
- Decentralised or centralised
- Flexible and user friendly
- Fully scaleable
- Extensive signal processing
- Compatible with ANX95
- High noise immunity

^[6] The ANX95 and ANX95E fire alarm panels use neither sub zones nor output groups. Their outputs must be configured based on information from the loop components.

Documentation Chart for *DELTA Technology — Quad*

The documentation chart below is a summary of the types of manuals, guides, instructions, etc. that are available for products in the *DELTA* Quad family.

Distributed via Internet & included with the *DELTA* Quad products

Internet, TechZone

DELTA Δ net

- ◇ **Engineering Design Guide *DELTA Technology***
(Standard functionality, reverse compatibility, special functions, etc.) ^{NPY}

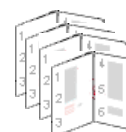


Manuals, A4



Delta Compact Quad

- ◇ **Assembly Guide *Delta Compact Quad*** ^{NPY}
- ◇ **Kit for *Compact Quad*: Assembly Cables** ^{NPY}
- ◇ **Installation Guide *Delta OP***
- ◇ **User's Guide *Delta OP***
- ◇ **Installation Guide *Delta DA Quad***
- ◇ **User's Guide *Delta DA Quad***



Data sheets, A4



Delta OP

- ◇ **Installation Guide *Delta OP***
- ◇ **User's Guide *Delta OP***



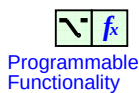
Delta DA Quad

- ◇ **Installation Guide *Delta DA Quad***
- ◇ **User's Guide *Delta DA Quad***



FireWin Explorer

- ◇ **User's Guide *FireWin Explorer***
(Windows-based PC application for main configuration and set-up of *Delta* modules)



Programmable Functionality

- ◇ **Configuration Guides for *Software modules***
(Instructions for configuring *Delta* modules with special control functions, protocols, etc.) ^{NPY}



KITS

- ◇ **Installation Guides for:**
- ◇ **Kit for OP: Fire Brigade Termination Card** ^{NPY}
- ◇ **Kit for OP,DA: eBus Communication Board**
- ◇ **Delta Remote Alarm Card 2R - Kit DCpt** ^{NPY}
- ◇ **Kit CPT: Printer, PC Interface Connection** ^{NPY}

Manuals and folders, A5

^{NPY} This manual is not published yet (per March 2003)

HDFA Detection Line — Fire Brigade Output

HDFA: Hardware Detection of Fire Alarm

In today's modern, software-based systems, if the microprocessor stops and the internal *watchdog* electronics do not manage to start it again, the system will not function satisfactorily.

In order to avoid this — and other communication faults on the network or detector loops — the *DELTA* modules have built-in galvanically insulated electronics for hardware detection of fire alarms. Thus the *DELTA* system conforms to the *European Standard EN54 Part 2*.

DELTA Net

How it works

DELTA Net communication — between *Delta OP* and *Delta DA Esser* modules — consists of two twin cables, where one of them is used as HDFA detection line and the other twin cable as *eBus* communication line.

The HDFA function will be able to report a fire alarm from the *Delta DA Esser* modules even if:

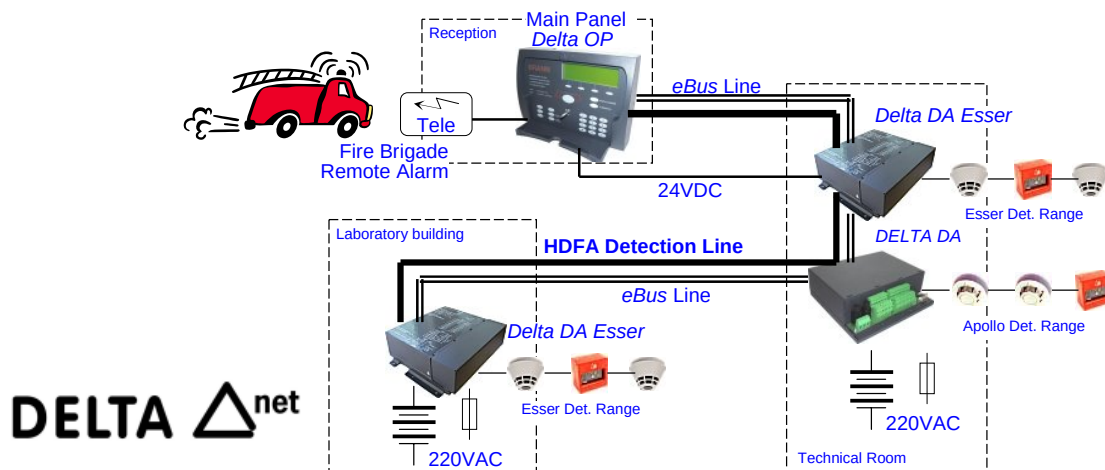
- The microprocessor in *Delta OP* stops
- The microprocessor in *Delta DA Quad* stops
- Communication on the *Delta DA Quad* detector loops does not work
- There is a break or short circuit in network communications

Fire Brigade Remote Alarm

In such situations the HDFA function in the relevant *Delta DA Esser* module will be activated. Any fire alarm signals will be detected by the *DA* module's HDFA function, which will send the message on to the main *Delta OP* panel via the HDFA detection line.

HDFA *alarms* will be shown as a fire alarm indication,  and will activate the fire brigade remote output in the main *Delta OP* panel.

Example: DELTA Net with HDFA Detection Line



 A HDFA alarm is indicated by LED and buzzer, it is not displayed on the graphic display.

Esser Detector Range Logic

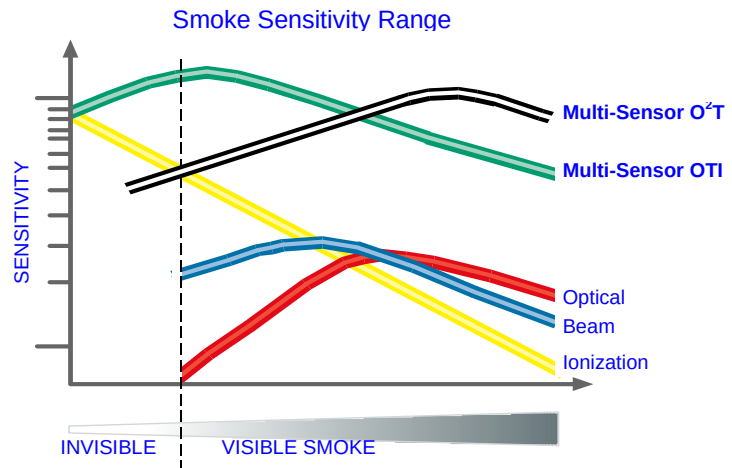


Esser Intelligent Analogue Range

The Esser intelligent fire detector 9200 series offer the highest level of reliability for a full range of fire detection applications: from low or medium to high-value concentrations.

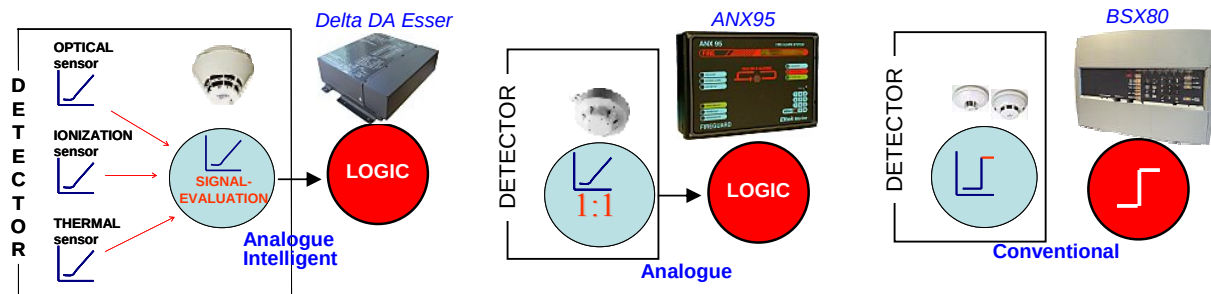
The detectors have elegant design and compact housing, and are available as optical-, ionization smoke detectors, heat detectors and multi-sensor detectors, which combine two or several detector principle in one device. There are three multi-sensor detector types available: the OT (optical, thermal), the OTI (optical, thermal & ionization) and the O²T (optical, optical & thermal) with two optical measuring angles, giving multi-criteria detection a new meaning.

The Esser detector range enables earliest possible fire detection due to the detectors' patented intelligent-multi-sensor technology, which combines different detection principles for automatic adjustment to ambient conditions.



Decentralized Intelligence

The Esser detector range decentralizes the fire alarm system intelligence by using a microprocessor in every detector. In addition to increase the fire detection reliability, the detectors' logic enables low maintenance costs by use of continuous self-diagnosis as well as remote diagnosis.



In the Esser fire alarm system, the detectors intelligently evaluate the signals of each sensor and decide the condition to report. Finally, the control panel logic determines the actions to carry out.

In analogue fire alarm system, the detectors analogue signal indicates the amount of smoke particles present. The control panel logic decides whether to report a normal, a pre-alarm or an alarm condition.

In conventional fire alarm systems, the detectors and the control panel report either a normal or an alarm condition.

Software Detector Addressing

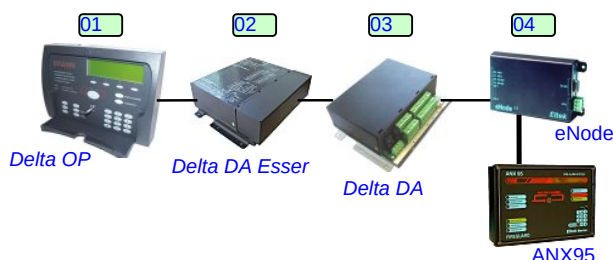
The Esser detector range is electronically addressed using the EDP-1 — Eltek's battery-driven Detector handheld Programmer. The address is stored in the detector's EEPROM. For more information, see the EDP-1 user's guide.



Addressing Rules for Networked Systems

Network — Address Ranges

Example of system units' numbering



Eltek's distributed fire alarm system usually consists of a network of *intelligent* fire alarm panels, operating panels and other modules — *Delta DA Esser, Delta DA, Delta OP, ANX95*, etc. — which communicate with each other via the fire-alarm network. Every panel and module is a *system unit* in the network. In order to identify each of them, they must be configured with a unique *system unit number*.

You can configure the *Delta* module's *system unit number* from the keypad of any *Delta OP* panels connected to the *eBus* network or from the *FireWin Explorer* application running on a PC.

Note that the configuration of the *system unit number* on an ANX95 and ANX95E control panel is only to be done from its own keypad.

Eltek's fire alarm system has the following address range for *system units* in networks:

Address Range for System Units		
Control Panel / modules	Connected to Novar Network	
	eBus	RS485 Master / Slave
Delta Compact Delta Compact Esser Delta OP	01 — 256	01 — 99
Delta DA Delta DA Esser	01 — 256	—
Delta Repeater	01 — 256	01 — 99
Fireguard DELTA ANX95 ANX95E	01 — 99	01 — 99
- Note that <i>eBus</i> networks require consecutive <i>system unit numbers</i> starting with number "01". Also, to conform to the <i>European Standard EN 54 Part 2</i>, the main operating <i>Delta OP</i> panel is to be configured with <i>system unit number</i> "01". - RS485 Master / Slave networks do not require consecutive <i>system unit numbers</i>, but do not conform to the EN54 standard. - The address ranges above are also limited by the wiring topology of the <i>eBus</i> (FTT10) network. The maximum number of nodes allowed is: 128 nodes in STAR, LOOP and FREE topologies and 64 nodes in BUS topology. This limited number of nodes may be increased by using back-to-back <i>eNodes</i> <<i>eBus</i>—(<i>eNode</i>—RS232C—<i>eNode</i>)—<i>eBus</i>>.		

Fire Zones & Output Groups — Definition

In order to make fire alarm system engineering more functional — and the *Delta DA Esser* modules easier to configure — you have to distribute the modules' input units (detectors) by zones and their outputs by groups.

Fire Zone



A *fire zone* — or operation zone — is the defined area of a building or property to be fire protected. All the fire detectors monitoring this area are assigned to the *fire zone*. A *fire zone* maybe monitored by one or more detectors or by all the detectors on a loop.

Fire zone definition enables you following features:

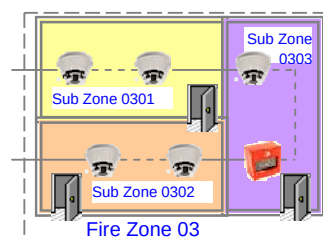
On the display

alarms or pre-alarms from detectors will be referred to their *fire zone*

During operation

you can test, isolate or de-isolate *fire zones* in one operation

Sub Zones



Max. Number
of Zones: 256
of Sub Zones: 256

While fire zones mainly define natural fire cells in the building, they are divided into *sub zones* in order to be able to implement various control requirements within the same fire zone.

Sub zone definition enables you to specify which *sub zones* will activate which *output groups*. Note that a specific detector may only be assigned to one sub zone (1 detector → 1 sub zone).

There are two types of sub zones:



Continuous Sub Zones

all the detector address numbers assigned to the sub zone are consecutive (may activate all types of *output groups*)



Discontinuous Sub Zones

the assigned detector address numbers are not consecutive (may only activate *single-knock output groups*)

Output Groups

All the *Delta DA Esser* alarm and control outputs are to be assigned to *output groups*. Normally, outputs that always have the same activation are assigned to the same *output group*.

There are three types of output groups:



Single-knock output group (Fire)

all the outputs assigned to the group are activated when at least one detector (single-knock) in the assigned sub zone reports a fire alarm



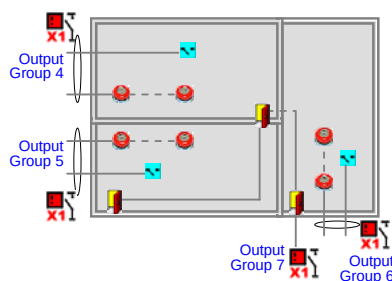
Double-knock output group (2-Detector Dependency)

all the outputs assigned to the group are activated when at least two detectors (double-knock) in the assigned sub zone reports a fire alarm



Isolation output group

all the outputs assigned to the group are activated when at least one detector in the assigned sub zone is isolated



Note that a specific output may only be assigned to one *output group* of the same type, but may also be assigned to other types; e.g. output TB03 may be assigned both to a *single-knock* and to a *double-knock* output group at the same time.

Output Groups to Sub Zones Assignments	
Sub Zone No.	Output Group No.
0101	1
0201	2
0202	3
0301	4 and 7
0302	5 and 7
0303	6 and 7

Input Assignments		
Fire Zone No. (max. 256)	Sub Zone No. (max. 256)	Detector Addresses
01	0101	0101 — 0160
02	0201	0261 — 0270
02	0202	0271 — 0295
03	0301	0201 — 0212
03	0302	0213 — 0220
03	0303	0221 — 0260

Output Assignments	
Output Groups	Output Numbers
Output Group 1	Sounder Output 01 Control Output 01
Output Group 2	Sounder Output 02 Control Output 02
Output Group 3	Sounder Output 03 Control Output 03
Output Group 4	Sounder Output 04 Control Output 04
Output Group 5	Sounder Output 05 Control Output 05
Output Group 6	Sounder Output 06 Control Output 06
Output Group 7	Control Output 07 (door retainers)

Fire Alarm System Configuration — Example

The fire alarm system main configuration is performed graphically via *FireWin Explorer* — a Windows based application — and consists of following steps:

1. Functional Configuration

- *Fire Zone* definition;
areas to be tested or isolated separately
- *Sub Zone* definition;
partial areas with specific control requirements
- *Output Group* definition;
alarm & control outputs with similar activation
- *Output Groups* to *Sub Zones* assignment

2. Input & Output Configuration

- Assignment of fire detectors to *sub zones*
- Assignment of alarm & control outputs to *output groups*

Functional Configuration

The functional configuration of the fire alarm system is not related to any specific fire detector or control output; on the contrary, is based on the functionality (operation & control requirements) of the premises to fire-protect, as the following example will show.

As we need to test and isolate the fire detectors in the protected premises — see drawings — as required by the building activities, we define 3 specific *fire zones*.

Fire Zone 01 has no specific control requirements other than all the detectors in the zone will activate the local sounders and ventilation. Then we only define *sub zone 0101* and *output group 1*.

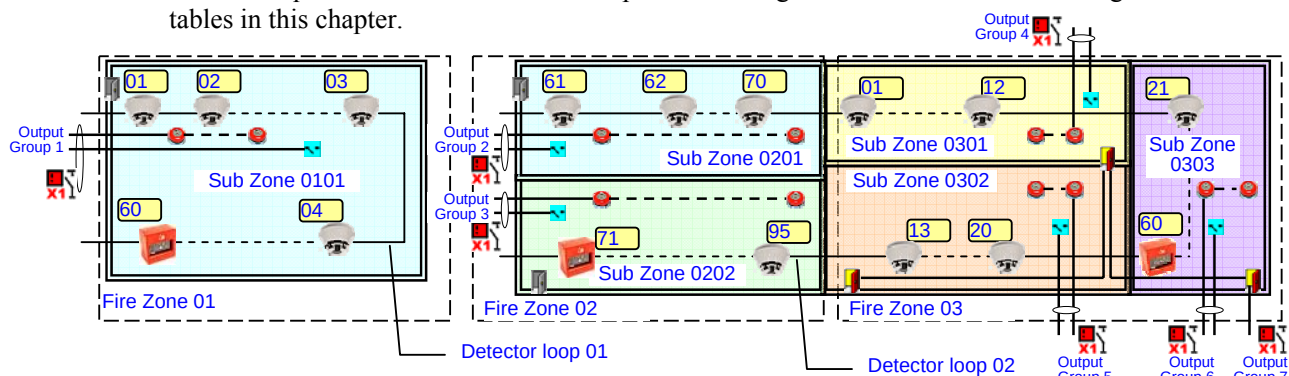
Fire Zone 02 protects two different areas, and requires that the fire detectors in one area only activate the sounders and ventilation of the respective area. Then we must define *sub zones 0201* and *0202*, as well as *output groups 2* and *3*.

Fire Zone 03 protects three different areas and also requires that the fire detectors in one area only activate the sounders and ventilation of the respective area. Then we must define *sub zones 0301*, *0302* and *0303*, as well as *output groups 4*, *5* and *6*. But this zone has an additional control requirement: all the fire detectors in fire zone must activate the door retainers in the zone. Then we also have to define *output group 7*.

Now we can assign the *output groups* to the respective *sub zones*, as indicated in the table.

Input & Output Configuration

The input & output configuration is in fact a detailed assignment of all the fire detectors to the predefined *sub zones*, and the assignment of all the alarm & control outputs to predefined *output groups*. Following our example, we have to assign the fire detectors on loop 01 and 02, and the required sounder & control outputs 01 through 07 as indicated in the diagram and tables in this chapter.



Loop Components — Address Ranges, Quantity

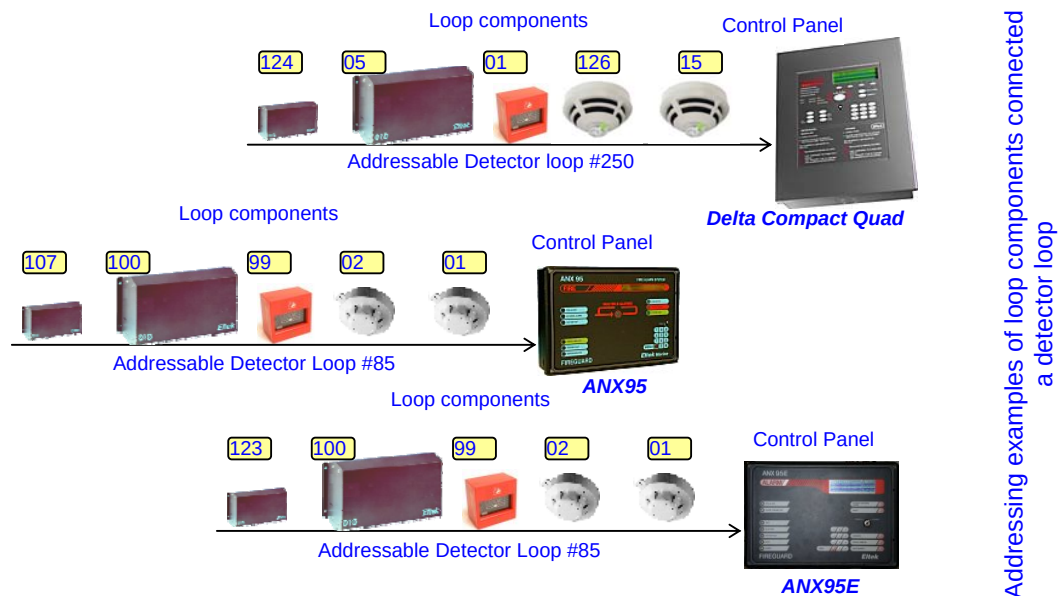
In *Eltek's* fire alarm system all *loop components* (detectors, manual call points, Zone Monitors, DIO units, etc.) are connected to the control panel's detector loops. Every *addressable loop component* in a fire alarm network must be coded with a *unique address*. The control panel must be configured with the *total number* of loop components connected each detector loop and the *unused address numbers* in the sequence (*not present*).

Example

For example, say that you have coded 5 detectors with addresses 06, 01, 02, 04 and 03, and connected them to loop #20. Then, you will have to configure the control panel so that loop #20 has a total of 6 detectors, and then configure address 05 on loop #20 as "not present".

Loop components on *Eltek's* fire alarm system use following address ranges:

Number of Components on Detector Loops (max.)			
FIRE ALARM PANELS →	<i>Delta DA Quad</i> <i>Delta Compact Quad</i> <i>Delta DA & Compact</i>	ANX95	ANX95E
Number of loops in the network	255	255	255
Detector loop's address range for detectors and manual call points	01 — 126 in a random sequence	01 → 99 in sequence	01 → 99 in sequence
Detector loop's address range for DIO- and other loop components	01 — 126 in a random sequence	100 → 107 in sequence	100 → 123 in sequence



The *unique address* of a loop component consists of an address number in which the first two digits indicate the *loop number* the component is connected to, and the remaining digits are *the component's address number* on the loop.

Examples

For example: address number '0526' is the *complete address* of a loop component coded with address '26' and connected to detector loop #'05'.

Another example: the *complete address* of output no. 3 on a DIO unit can be '210.125.3' if the unit is coded with the address '125' and is connected to detector loop #'210'.

Key-Entry for Numbers Above 99

Some of the fire alarm systems use hexadecimal figures (two digits only) to display and refer to *system unit numbers*, *loop component numbers* and *fire zone numbers*.⁸

If you have to program one of these fire systems⁹ with numbers higher than 99, for example 'system unit 140' or 'detector address 120' or 'fire zone 200', you have to use hexadecimal digits from '01' to 'FE', (corresponding to '01' to '254' in the decimal system).

Conversion table: decimal to hexadecimal figures																	
Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex
00	00	26	1A	52	34	78	4E	104	68	130	82	156	9C	182	B6	208	D0
01	01	27	1B	53	35	79	4F	105	69	131	83	157	9D	183	B7	209	D1
02	02	28	1C	54	36	80	50	106	6A	132	84	158	9E	184	B8	210	D2
03	03	29	1D	55	37	81	51	107	6B	133	85	159	9F	185	B9	211	D3
04	04	30	1E	56	38	82	52	108	6C	134	86	160	A0	186	BA	212	D4
05	05	31	1F	57	39	83	53	109	6D	135	87	161	A1	187	BB	213	D5
06	06	32	20	58	3A	84	54	110	6E	136	88	162	A2	188	BC	214	D6
07	07	33	21	59	3B	85	55	111	6F	137	89	163	A3	189	BD	215	D7
08	08	34	22	60	3C	86	56	112	70	138	8A	164	A4	190	BE	216	D8
09	09	35	23	61	3D	87	57	113	71	139	8B	165	A5	191	BF	217	D9
10	0A	36	24	62	3E	88	58	114	72	140	8C	166	A6	192	C0	218	DA
11	0B	37	25	63	3F	89	59	115	73	141	8D	167	A7	193	C1	219	DB
12	0C	38	26	64	40	90	5A	116	74	142	8E	168	A8	194	C2	220	DC
13	0D	39	27	65	41	91	5B	117	75	143	8F	169	A9	195	C3	221	DD
14	0E	40	28	66	42	92	5C	118	76	144	90	170	AA	196	C4	222	DE
15	0F	41	29	67	43	93	5D	119	77	145	91	171	AB	197	C5	223	DF
16	10	42	2A	68	44	94	5E	120	78	146	92	172	AC	198	C6	224	E0
17	11	43	2B	69	45	95	5F	121	79	147	93	173	AD	199	C7	225	E1
18	12	44	2C	70	46	96	60	122	7A	148	94	174	AE	200	C8	226	E2
19	13	45	2D	71	47	97	61	123	7B	149	95	175	AF	201	C9	227	E3
20	14	46	2E	72	48	98	62	124	7C	150	96	176	B0	202	CA	228	E4
21	15	47	2F	73	49	99	63	125	7D	151	97	177	B1	203	CB	229	E5
22	16	48	30	74	4A	100	64	126	7E	152	98	178	B2	204	CC	230	E6
23	17	49	31	75	4B	101	65	127	7F	153	99	179	B3	205	CD	231	E7
24	18	50	32	76	4C	102	66	128	80	154	9A	180	B4	206	CE	232	E8
25	19	51	33	77	4D	103	67	129	81	155	9B	181	B5	207	CF	233	E9

To enter the letter:	First press the key:	then, on the numeric keypad, the key:
A	Hex key	0
B	Hex key	1
C	Hex key	2
D	Hex key	3
E	Hex key	4
F	Hex key	5

To enter the letters in hexadecimal figures using the numeric keypad on the panel you must first press the 'hex key'¹⁰ on the panel and then one of the digits on the numeric keypad. Use the conversion table.

For example: to enter fire zone number '200', which corresponds to 'C8', press the following keys:

Hex key ② ⑧

⁸ Windows program *FireWin Explorer* uses decimal digits: for example, fire zone 215 is displayed as '215'. This applies when the control panel is configured (set up) via the panel's keypad, not by *FireWin Explorer*.
¹⁰ The location of the 'Hex key' is not the same for all control panels: On *Delta OP*, it is located above the SCROLL DISPLAY key; ANX95 uses its 'hidden key', while ANX95E uses its EVACUATE key

5. Feedback to *Honeywell Life Safety*

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In order to achieve this goal at any time, we wish to follow up our products throughout their lifetime. We therefore request your kind assistance.

Your Comments about *product name*

You can contact us via our Internet pages, www.eltek-fs.com, if you have any comments about this product regarding technical specifications, design, maintenance or service. We also appreciate your comments about this manual, or other technical documents.



Our addresses (mail, Internet) and telephone and fax numbers are on page 2, as well as on the cover pages of this booklet.

We will acknowledge your comments and inform you about eventual changes that we perform based on your feedback.

We thank you for your cooperation!

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